

CLAIMS

1. A Schottky barrier diode comprising:
a substrate region of a first conductivity type formed in a
semiconductor material layer of the same conductivity type;
5 a metal layer; and
at least two doped regions of a second conductive type formed in
said semiconductor material layer, each one of said doped regions being
disposed under said metal layer and being separated from the other doped
region by portions of said semiconductor layer.

10 2. The Schottky barrier diode according to claim 1, in which said
semiconductor material layer comprises a first resistivity value, and said
doped regions each comprise a second resistivity value, wherein said
second resistivity value is higher than said first resistivity value.

15 3. The Schottky barrier diode according to claim 1, in which said
substrate comprises a doping value higher than a doping value of said
semiconductor material layer.

4. The Schottky barrier diode according to claim 1, in which said
doped regions further comprise respective body regions.

20 5. The Schottky barrier diode according to claim 1, in which said
doped regions comprise doped regions that equalize the charge in said
semiconductor material layer.

6. The Schottky barrier diode according to claim 1, in which said
body regions comprise heavily doped body regions having the same
conductivity type of said doped regions.

25 7. The Schottky barrier diode according to claim 1, in which said
semiconductor material layer comprises a resistivity value lower than five
Ohm-cm for a breakdown voltage higher than 200V.

8. The Schottky barrier diode according to claim 1, in which said doped regions comprise P-type doped regions.

9. The Schottky barrier diode according to claim 1, in which said semiconductor material layer comprises an N-type semiconductor material layer.

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